P2-39 - Assessment of Water Quality Index (WQI) of Commercially Available Drinking Bottled Water

Wednesday, 28 April 2021

10:00 AM - 4:00 PM

Virtual Meeting

Abstract

Introduction: Bottled drinking water is becoming increasingly popular due to its convenience and perceived benefits. By 2017, consumption of bottled water was estimated to have reached 391 billion litres. WQI is considered as the most effective method used for overall description of the quality of water bodies used for different purposes. Water quality is characterized based on physical, chemical, and microbiological parameters and human health is at risk if values exceed acceptable limits.

Purpose: The aim of this study was to determine the WQI of different bottled water from different sources sold commercially in different packaging.

Methods: Commercially available bottled water from four different water sources (spring, underground aquifer, reservoir, and tap) and in different packages (PET, paper carton and glass bottles) were evaluated for electrical conductivity (µS/cm), pH, resistivity (kΩ/cm), total dissolved solids (TDS in ppm), oxygen reduction potential (ORP, mV), nitrates (mg/L) and heterotrophic count (HPC). Calculated WQI was used to confirm the quality of these bottled water samples using the Weighted Arithmetic index method.

Results: Electrical conductivity, resistivity, salinity, total dissolved solids, Oxygen reduction potential, nitrates, and heterotrophic counts were significantly different among the samples. The values of the parameters recorded ranged as follows: electrical conductivity (208.3 – 607.3 µS/cm) pH (7.20 – 8.22), resistivity (1.62 – 5.02 kΩ/cm), TDS (107.4 – 307.3 ppm), ORP (142.6 – 224.6 mV), nitrate (2.04 – 12.09 mg/L), and HPC (50 – 110 CFU/mL). The WQI values ranged from 8.14 – 40.19 (excellent – good). This study showed that all parameters were within acceptable limits. Furthermore, for the analysed bottled waters, irrespective of the source and packaging type, the water quality index ranged from excellent to good.

Significance: The analysis of these commercially bottled waters is relevant for

qualitative examinations since they are bottled and sold to the public from various sources such as groundwater, spring, distilled and tap.

Presenter

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